AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

22 21 23 20 25 12 19 26 17 27 13 15 28 29 14 16 18 30 31 32 33

LISTING OF CLAIMS:

Claims 1 to 11 (Canceled)

12. (Currently Amended) A multi-beam x-ray generating device comprising:

a stationary field-emission cathode comprising a plurality of stationary and individually controllable electron-emitting pixels disposed in a predetermined pattern on the cathode;

an anode opposing the cathode comprising a plurality of focal spots disposed in a predetermined pattern that corresponds to the predetermined pattern of the pixels; and

a vacuum chamber enveloping the anode and cathode,

wherein the plurality of pixels comprise at least one pixel having a first emission area and at least one pixel having a second emission area, wherein the first emission area is larger than the second emission area.

13. (Previously Presented) The device of claim 12, wherein the cathode comprises a nanostructure-containing material.

14. (Previously Presented) The device of claim 13, wherein the nanostructure-containing material comprises single walled carbon nanotubes.

15. (Previously Presented) The device of claim 12, wherein the cathode has a planar geometry.

16. (Previously Presented) The device of claim 15, wherein the anode has a planar geometry.

17. (Previously Presented) The device of claim 12, further comprising at least one gate electrode arranged to control the field-emission cathode.

18. (Previously Presented) The device of claim 17, wherein the at least one gate electrode comprises a plurality of individually addressable gate electrode control units, each unit arranged to control a corresponding electron-emitting pixel.

19. (Previously Presented) The device of claim 12, wherein the focal spots comprise materials that produce x-rays with different energy distributions when bombarded with electrons emitted from the pixels.

20. (Previously Presented) The device of claim 12, comprising one focal spot for every pixel.

21. (Previously Presented) The device of claim 12, further comprising a computer programmed to control the plurality of pixels.

22. (Previously Presented) The device of claim 21, wherein the computer is programmed to turn on the pixels in sequence, at a predetermined frequency, for a predetermined duty cycle, and/or for a predetermined dwell time.

23. (Previously Presented) The device of claim 12, wherein the pixels and corresponding focal spots are arranged along the circumference of a circle.

24. (Canceled)

25. (Previously Presented) The device of claim 12, wherein the pixels and corresponding focal spots are arranged along the circumferences of a plurality of concentric circles.

26. (Previously Presented) The device of claim 12, wherein the pixels are arranged in at least one cluster, the at least one cluster comprising a plurality of immediately adjacent pixels.

27. (Previously Presented) The device of claim 12, wherein each pixel comprises a multi-layer electrical gate or coil constructed to focus a beam of electrons emitted from each pixel.

28. (Previously Presented) The device of claim 12, further comprising a collimator constructed to focus the x-ray beams generated by the focal spots.

29. (Previously Presented) The device of claim 12, further comprising an x-ray detector.

30. (Previously Presented) The device of claim 29, wherein the detector comprises a plurality of discrete detector elements.

31. (Previously Presented) The device of claim 29, wherein the detector comprises a matrix of detector pixels.

32. (Previously Presented) The device of claim 29, further comprising computer hardware and software for collecting input from the detector, and constructing an image from the input.

33. (Previously Presented) The device of claim 32, further comprising a monitor for displaying the image.

34. (Previously Presented) An x-ray generating device comprising:

a stationary field-emission cathode, the cathode comprising a planar surface with an electron-emissive material disposed on at least a portion thereof;

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a gate electrode disposed in parallel spaced relationship relative to the planar surface of the cathode, the gate electrode comprising a plurality of openings having different sizes;

an anode opposing the cathode and spaced therefrom, the anode comprising a plurality of focal spots aligned with the electron-emissive material; and

a vacuum chamber enveloping the anode and cathode;

wherein the gate electrode is operable such that the openings can be manipulated to bring at least one beam of electrons emitted from the cathode into and out of registry with at least one of the focal spots.

35. (Previously Presented) The device of claim 34, wherein the openings comprise a plurality of mesh grids.

36. (Previously Presented) The device of claim 34, wherein the gate electrode is rotatable.

37. (Previously Presented) The device of claim 35, wherein the mesh grids are formed from tungsten, molybdenum, nickel, or alloys thereof.

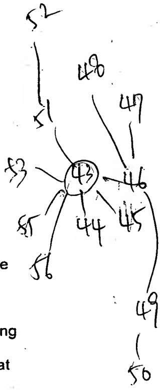
38. (Previously Presented) The device of claim 35, wherein each of the mesh grids can be electrically and independently controlled.

39. (Previously Presented) The device of claim 34, further comprising a controlling unit for controlling the operation of the gate electrode.

40. (Previously Presented) The device of claim 36, further comprising a computer programmed to control the speed at which the gate electrode is rotated, a voltage applied to the gate electrode, a sequence of focal spots brought into registry with electrons emitted from the cathode, and/or the amount of time that the emitted electrons are allowed to remain in registry with a particular focal spot.

41. (Previously Presented) The device of claim 34, wherein the cathode comprises a nanostructure-containing material.

42. (Previously Presented) The device of claim 34, wherein the nanostructure-containing material comprises single walled carbon nanotubes.



43. (Currently Amended) A method of scanning an object with x-rays directed at the object from different locations, the method comprising:

(i) providing a stationary field-emission cathode comprising a plurality of stationary and individually controllable electron-emitting pixels and disposing the pixels in a predetermined pattern on the cathode;

(ii) locating an anode in opposing relationship to the cathode and providing the anode with a plurality of focal spots disposed in a predetermined pattern that corresponds to the predetermined pattern of the pixels;

(iii) enveloping the anode and cathode with a vacuum chamber; and

(iv) activating at least one of the pixels thereby generating a beam of emitted electrons that is incident upon a corresponding focal spot of the anode, thereby generating an x-ray, and directing the x-ray toward the object to be scanned,

wherein step (i) comprises providing at least one pixel having a first emission area and providing at least one pixel having a second emission area, wherein the first emission area is larger than the second emission area.

44. (Previously Presented) The method of claim 43, wherein step (iv) comprises activating a first pixel thereby generating a first x-ray incident upon the object to be scanned from a first location, then sequentially activating at least a second pixel thereby generating a second x-ray incident upon the object to be scanned from a second location.

45. (Previously Presented) The method of claim 43, wherein step (iv) comprises simultaneously activating a plurality of pixels thereby generating a plurality of x-rays incident upon the object to be scanned from multiple locations.

46. (Previously Presented) The method of claim 43, further comprising the step of:

(v) locating an x-ray detector such that x-rays passing through the object being scanned are incident up the detector.

47. (Previously Presented) The method of claim 46, wherein the detector comprises a plurality of discrete detectors.

48. (Previously Presented) The method of claim 46, wherein the detector comprises an array of detector pixels.

49. (Previously Presented) The method of claim 46, further comprising the step of:

(vi) collecting input from the detector and constructing an image from the input.

50. (Previously Presented) The method of claim 49, further comprising the step of:

(vii) displaying the constructed image.

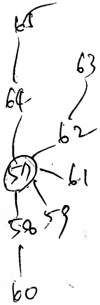
51. (Previously Presented) The method of claim 43, wherein the cathode comprises a nanostructure-containing material.

52. (Previously Presented) The method of claim 51, wherein the nanostructure-containing material comprises single walled carbon nanotubes.

53. (Previously Presented) The method of claim 43, wherein steps (i) and (ii) comprise arranging the pixels and corresponding focal spots along the circumference of a circle.

54. (Canceled)

55. (Previously Presented) The method of claim 43, wherein steps (i) and (ii) comprise arranging the pixels along the circumferences of a plurality of concentric circles.



56. (Previously Presented) The method of claim 43, wherein step (i) comprises arranging the pixels in at least one cluster, the at least one cluster comprising a plurality of immediately adjacent pixels.

57. (Previously Presented) A method of scanning an object with x-rays directed at the object from different locations, the method comprising:

(i) providing a stationary field-emission cathode comprising a planar surface, and providing an electron emissive material on at least a portion of the planar surface;

(ii) disposing a gate electrode in parallel spaced relationship relative to the planar surface of the cathode, and providing the gate electrode with a plurality of openings having different sizes;

(iii) locating an anode in opposing relationship to the cathode and providing the anode with a plurality of focal spots aligned with the electron-emissive material;

(iv) enveloping the anode and the cathode in a vacuum chamber; and

(v) manipulating the gate electrode to bring at least one beam of electrons emitted from the cathode into and out of registry with at least one of the focal spots.

58. (Previously Presented) The method of claim 57, wherein the openings in the gate electrode comprise a plurality of mesh grids.

59. (Previously Presented) The method of claim 57, wherein step (v) comprises rotating the gate electrode to bring the at least one beam of emitted electrons into and out of registry with the at least one focal spot.

60. (Previously Presented) The method of claim 58, wherein the mesh grids are formed from tungsten, molybdenum, nickel, or alloys thereof.

61. (Previously Presented) The method of claim 57, wherein step (ii) further comprises independently opening and closing the openings of the gate electrode.

62. (Previously Presented) The method of claim 57, further comprising the step of:

(vi) controlling the operation of the gate electrode with a computer.

63. (Previously Presented) The method of claim 62, wherein step (v) comprises rotating the gate electrode, and step (vi) comprises controlling the speed of rotation of the gate electrode, controlling a voltage applied to the gate electrode, controlling the sequence of focal spots brought into registry with electrons emitted from the cathode, and/or controlling the amount of time that the emitted electrons are allowed to remain in registry with a particular focal spot.

64. (Previously Presented) The method of claim 57, wherein the cathode comprises a nanostructure-containing material.

65. (Previously Presented) The method of claim 64, wherein the nanostructure-containing material comprises single walled carbon nanotubes.